

Remarks

Claims 1 to 6, as amended, plus new claims 7 and 8 remain in this application and are presented for reconsideration. Claims 1 and 4 have been amended to recite more clearly that the off segments occur between the end of a power segment and the commencement of a succeeding power segment. This is consistent with the disclosure at Figs. 2 and 3, as discussed at page 5, lines 18 - 19 and page 6, lines 6 to 16. The reverse emf that is generated by the (reactive) load when the power wave goes to zero appears at the commencement of the next successive power segment, as shown in Fig. 4 and as discussed at page 6, line 17 to page 7, line 6. The reverse emf pulse 31 appears at the beginning of the next power segment. In the case of square wave power, as illustrated, the reverse emf pulse would appear at the beginning of each power pulse. In other systems, like pulsed DC, e.g., pulse-width modulated power, the reverse emf pulse would appear at the commencement of at least some of the power pulses.

Claims 1 and 4 were rejected under 35 U.S.C. 112, second paragraph, as being allegedly indefinite in the use of the limitation "... at the commencement of at least certain ones of said power segments." Applicant urges that the amendments discussed in the paragraph just above overcome this rejection.

Claims 1 and 4 have also been amended to reflect that the principles of this invention are not limited only to the AC power of the type employed in the preferred embodiment. In fact, the invention can be employed in controlling pulsed unipolar current, e.g., for driving a DC permanent-magnet motor. The limitation formerly in Claims 1 and 4 has been preserved in new dependent Claims 7 and 8, respectively.

Claims 4 to 6 were indicated to be drawn to patentable subject matter, and would be allowed once the rejections of those claims under 35 U.S.C. 112 were overcome. Applicant submits that Claim 4 plus its dependent Claims 5, 6, and 8, are now in

condition for allowance.

Claims 1 to 3 were rejected under 35 U.S.C. 102(b) as being allegedly anticipated and unpatentable over Becerra U.S. Pat. 6,046,554. Becerra was cited for showing back emf measurements taken with a sensor that detects back emf, with the measurement being used in adjusting the drive controls for the motor. However, Becerra is quite different from the arrangement of the present invention, and does not suggest the combination of features as recited in Amended Claim 1.

Becerra concerns the factory calibration of a drive circuit for an electronically controlled motor (ECM) that is a permanent magnet motor. Becerra's calibration is necessary because of variations in magnetic material from one motor to another. See column 1, lines 43 to 49 of this reference. The calibration process involves rotating the motor to bring it up to a known speed against a known, predetermined torque. Then the back emf is measured, but this is not the same back emf that appears on the motor drive windings during application of the power wave. Instead, in one of two alternative techniques, the power is turned off, and the back emf is measured as the motor decelerates (col. 2, lines 7 to 20). In the other technique, the back emf is sensed on a separate "quadrature" winding that is electrically isolated from the main winding (col. 2, lines 25 to 34). The measurements and calibration are for only one given motor speed and for one predetermined load. In operation, Becerra's motor drive circuit remains at the factory setting, regardless of any changes in load or regardless of any need to operate the motor at a different speed. The drive circuit in the Becerra patent does not self-adjust to accommodate for any fluctuation in the main input line voltage, and does not provide any sort of brown-out limited operation. There is no suggestion of using the Becerra calibration technique on the fly during operation for adjusting the drive current to meet changes in load, changes in motor speed, or for that matter, changes in input power

quality.

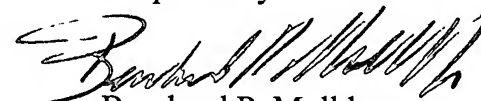
Accordingly, nothing in Becerra shows or suggest the combination of features as recited in Amended Claim 1, namely, controlling pulsed power while it is being supplied to a load nor does Becerra show or suggest the step of detecting a reverse emf pulse produced by the load on the same load conductors that the power is applied to during the time that the power wave is applied to them, i.e., during application thereto of said waveform, as specifically recited in Amended Claim 1. Becerra, as mentioned before, does not adjust the power being applied to the load based on the detected magnitude of the reverse emf pulse, as also recited in Amended Claim 1.

Claims 2, 3, and 7 depend from Claim 1 and are urged to be patentable over the cited reference for the same reasons as their parent claim..

Additional references cited by the Examiner, namely, Bixel et al., Hair, King et al., Unsworth et al. '197, Unsworth et al. '281, and Chen et al., were not discussed in the Official Action. Applicant believes that these additional references do not anticipate or suggest the subject matter defined in the claims being asserted.

In view of the foregoing amendments and remarks, it is urged that all of Claims 1 to 8 are patentable, and early and favorable consideration is earnestly solicited.

Respectfully submitted


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